

## **International Accounting Standard (IAS) 41: What Are the Implications for Reporting Forest Assets?**

Kathleen Herbohn  
UQ Business School  
The University of Queensland  
Brisbane, Qld 4072, Australia

John Herbohn  
School of Natural and Rural Systems Management  
The University of Queensland  
Gatton, Qld 4343, Australia

This paper investigates the implications of International Accounting Standard 41 (*IAS 41*) for European Union (EU) entities reporting on material holdings of forest assets. To all intents and purposes, Australia has been a test for *IAS 41* because of the close similarities between *IAS 41* and the relevant Australian regulation on forestry that has been operational for the last four years. The Australian reporting experience is used to identify potential implications for EU reporting entities. Evidence suggests that constituents' key concerns with *IAS 41* relate to the measurement<sup>1</sup> of biological assets at fair value and the inclusion in income of unrealised gains or losses from measuring these assets at fair value. These concerns are borne out by the Australian experiences. Evidence is presented that suggests that compliance with *IAS 41* will allow statement preparers a choice of methods to determine the fair value of timber assets. Additionally, it seems likely that the recognition of unrealised gains and losses from timber assets from changes in fair value and the harvest of agricultural produce will markedly affect income statements, introducing greater volatility into reported income. The impact has been greater for government departments. The median timber gain expressed as a percentage of net profit ranged from 44.5% to 79.9% in individual years. An unresolved issue has been identified – do such accounting procedures reflect the nature of investment in forestry?

**Keywords:** Agricultural accounting, forestry accounting, international accounting standards, IAS 41, AASB 1037

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<sup>1</sup> Accountants 'measure' the elements of financial reports and 'measurement' is used in that context within this paper. That is, assets, liabilities, expenses and revenue that arise from economic transactions and events that have various properties are measured using various valuation bases that might include historical cost, fair value and net present value.

## INTRODUCTION

Financial reports are an important means by which companies convey financial and other information about their operations to investors and other interested parties<sup>2</sup>. The content and form of external financial reports is regulated by accounting standards and, until recently, accounting standards have been the domain of national governments and accounting organizations within a particular country. For example, within the EU, there has been no single set of accounting standards, but rather a variety of national standards of varying degrees of completeness, sophistication and authority, reflecting different national traditions and institutional arrangements (Whittington 2005). The globalisation of capital markets commencing in the 1960s and 1970s however led to calls for the international financial reporting practices to be 'harmonised' (Henderson *et al.* 2006). The underlying argument was that a common set of standards would increase the comparability of reports based in different countries but traded in the same market (Whittington 2005). In response, the International Accounting Standards Committee (IASC) was formed in 1973, and work commenced on developing international accounting standards. In 2001, the IASC was replaced by the International Accounting Standards Board (IASB). The IASB inherited a set of 34 international accounting standards (IASs) from its predecessor and undertook to improve these existing standards. By March 2004, the IASB had issued 17 amended IASs and developed six new IASs.

In July 2003, the European Commission formally approved the requirement for the use of IASs from 2005 in the group accounts of all companies listed on EU stock exchanges. This regulation also applies to members of the European Economic Area, and Member States were given discretion to apply this requirement to a wider group of companies and their accounts (Whittington 2005). Henderson *et al.* (2005) provided a concise summary of the historical context of the formation of the IASB and associated IASs. Whittington (2005) provided an excellent overview of the adoption of IASs within the European Union.

This paper investigates the potential impact of International Accounting Standard (IAS) 41 'Agriculture' on European reporting entities with material<sup>3</sup> forestry assets. Information about the performance of biological assets held over the period can be used by management to discharge their accountability to existing investors and to raise additional capital. Further, the standardization of agricultural reporting practices both within and between countries has the potential to facilitate comparisons between agricultural enterprises.

Prior studies have considered the potential impacts of IAS 41 on agricultural entities operating in European Union (EU) countries and Francophone countries (e.g. Argilés and Slof 2001, Elad, 2004). This paper provides additional, more detailed practical insights from the Australian experience. This is possible because accounting for biological assets and in particular forest assets has been undertaken

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<sup>2</sup> Financial reports include an income statement, a balance sheet, a cash flows statement and associated notes on these statements, all of which are usually subject to annual review by an external auditor.

<sup>3</sup> Information is considered *material* if its omission, misstatement or non-disclosure has the potential to influence the economic decision of users taken on the basis of the financial report, or to affect the discharge of accountability by management or the governing body of the entity (AASB 1031 'materiality').

by Australian reporting entities for the last four years in accordance with Australian Accounting Standards Board (*AASB*) 1037 'Self-generating and Regenerating Assets'. Since the requirements of *IAS 41* are highly similar, to all intents and purposes Australia has been a test case for *IAS 41*.

There are two parts to the investigation reported in this paper. First, the concerns with *IAS 41* and *AASB 1037* that have been raised by constituents are outlined. Particular attention is paid to the concerns of forest owners. These concerns then inform the second stage of investigation, a review of the financial statements of Australian public companies and government departments<sup>4</sup> with material holdings of forest assets. The review spans the first four years of compliance with *AASB 1037*, and seeks to identify the impact of compliance. This investigation is then used to provide insights into the implications of *IAS 41* for EC entities with forests assets.

The focus of this paper is on forest assets, although the scope of *IAS 41* is broader<sup>5</sup>. This focus reflects the economic importance of forestry activities within the EU. Forestry is a major contributor to Gross Domestic Product (GDP) in some European countries<sup>6</sup>. For example, in Finland which has a forest cover of 68%, agriculture, hunting and forestry comprise 3.5% of gross total value added, with a further 1.2% added from the manufacture of wood and wood products, and 6.0% from the manufacture of pulp, paper and paper products (Eurostat Database 2003). Forestry is also an important source of employment within the EU. In 2000, there were approximately 1.4 M people employed within the European forest sector, with a further 1.5 M and 1.1 M people employed in the wood industries and pulp and paper industries respectively (UNECE/FAO 2002). Further, the growing of trees provides raw materials that drive the secondary processing industries in the forest sector. To illustrate the scope of raw material provided, in 2000 there were approximately 1004 M ha of forests in Europe, of which about 85% were available for harvest (MCPFE 2003). This represents a standing volume of timber of over 100 billion m<sup>3</sup> (MCPFE 2003). Within the EU-25, the total forest area in 2004 was 160 M ha, with a growing stock of 18 billion m<sup>3</sup>. Each year within Europe the total volume of wood harvested is about 500 M m<sup>3</sup> and within the EU-25 countries about 323.2 M m<sup>3</sup> of roundwood was harvested in 2003 (Mäki-Simola and Panagopoulos 2005)<sup>7</sup>.

The high value of the forest sector within many EU-25 countries means that *IAS 41* is a potentially important development for European reporting entities with material forestry assets.

<sup>4</sup> Australian government departments are required to prepare general purpose financial reports (balance sheet, income statement, cash flows statement) in conformity with Australian accounting standards.

<sup>5</sup> In fact, *IAS 41* applies to activities directed toward the management by an enterprise of the biological transformation of biological assets for sale, into agricultural produce or into additional biological assets.

<sup>6</sup> It is, however, difficult to quantify the exact impact because forestry data are aggregated into agricultural and hunting activities (Category 02, Section A) in the Eurostat database.

<sup>7</sup> Specifically, the largest EU-25 producers of sawnwood and paper and paperboard in 2003 were Sweden (61.4 M m<sup>3</sup>), Finland (49.2 M m<sup>3</sup>), Germany (45.4 M m<sup>3</sup>) and France (33.9 M m<sup>3</sup>), which together accounted for about 60% of the total output from EU-25 countries (Mäki-Simola and Panagopoulos 2005).

The remainder of the paper is structured as follows. Section 2 provides background on accounting for agriculture, with a focus on timber assets. The requirements of *IAS 41* are also reviewed and the potential concerns that have been raised regarding the requirements of *IAS 41* and the Australian equivalent (*AASB 1037*) are highlighted. The effects of compliance with *AASB 1037* are examined in section 3. In section 4, the implications of *IAS 41* for EU entities reporting on material forest assets are discussed, drawing on the analysis of the implications of *AASB 1037*. Concluding comments follow.

## INTERNATIONAL ACCOUNTING STANDARD 41 'AGRICULTURE'

In many countries, accounting for agricultural activities has traditionally received little attention from accounting researchers, practitioners and regulators. Instead, pronouncements on agricultural accounting have been developed in an *ad hoc* fashion on a country-by-country basis. In North America, the Canadian Institute of Chartered Accountants (CICA 1986), and the American Institute of Certified Public Accountants (AICPA 1985, 1987) developed guidelines on income measurement and other agricultural reporting issues. Both AICPA (1985) and CICA (1986) advocated historical cost as an appropriate asset measurement basis except in rare circumstances where realizable value may be considered as an alternative. In Europe, the Farm Accountancy Data Network (FADN) established by the European Commission in 1965 has been developing general procedures and detailed guidelines for farm accounting. Argilés and Slof (2001) noted that FADN has produced a highly structured body of data collection rules and procedures designed to produce aggregated reports that are similar to a balance sheet and an income statement. Another European initiative is the French 'Plan Comptable Général Agricole' (PCGA) that from 1986 developed standards relating to particular agricultural assets and transactions. However, possibly one of the most comprehensive agricultural accounting frameworks has been developed in Australia with the issue of the accounting standard *AASB 1037* 'Self-Generating and Regenerating Assets'. It has been operative since June 2001.

Recently, the release of International Accounting Standard (*IAS*) 41 'Agriculture' by the International Accounting Standards Board (IASB) changed agricultural accounting from a domestic issue dealt with by individual countries to a global issue. As part of international harmonization, International Financial Reporting Standards (IFRS) have been adopted by all listed companies within the European Union from January 2005, regulators in Australia require international standards for the statutory accounts of all domestic companies from January 2005, and New Zealand has indicated that it will follow suit in 2007. A survey by Deloitte and Touche (2003) predicted that more than 90 countries would require or permit IFRS for listed companies by 2005.

Under *IAS 41*, biological assets relating to agricultural activity are to be measured at fair value<sup>8</sup> less estimated point-of-sale costs on initial recognition, and at each reporting date. Gains or losses on initial recognition and from a change in fair value

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<sup>8</sup> Fair value is the amount for which an asset could be exchanged, or a liability settled, between knowledgeable, willing parties in an arm's length transaction.

of biological assets are to be included in profit or loss for the period in which they arise. In addition, a gain or loss on initial recognition of agricultural produce harvested from a biological asset less point-of-sale costs<sup>9</sup> is to be included in profit or loss for the period in which it arises.

Alternate valuation methods are permitted under *IAS 41* if an active market does not exist for a biological asset. Fair value can be determined with reference to the most recent market transaction price, market prices for similar assets, sector benchmarks, or the present value of expected net cash flows. In circumstances where there is little biological transformation, or the impact of biological transformation on price is not expected to be material, cost can be used to approximate fair value.

Generally, the recognition and reporting requirements of *IAS 41* outlined above and the Australian accounting standard *AASB 1037* are the same. Both standards require biological assets to be measured at fair market value less selling costs (referred to in *AAS 41* as net realizable value and in *AASB 1037* as net market value) with any changes in value over an accounting period included in income as a gain or loss. In addition, both standards require recognition of a gain or loss in income from the harvest of agricultural produce. Thus, the Australian reporting experiences can be used to inform discussion of the consequences of *IAS 41*<sup>10</sup>.

Interestingly, *IAS 41* has met with a mixed reaction from accountants and reporting entities. For example, it has been criticized for being too academic and for introducing inappropriate measurement methods for biological assets. In light of the response to and likely widespread adoption of *IAS 41*, the following sections review concerns with the general approach of this standard, and then focuses on concerns for the holders of timber assets.

### Concerns with the General Approach of *IAS 41*

Parallels can be drawn between the Australian experiences and the situation that now faces reporting entities in countries committed to the adoption of IFRS. In Australia, the requirements of *AASB 1037* represented a major departure from the then existing accounting practices of Australian reporting entities. Prior to *AASB 1037*, a variety of measurement methods were used for biological assets, the most common being historical cost (Herbohn *et al.* 1998, Dowling and Godfrey 2001). Further, it was not common practice to recognise unrealized gains or losses as revenue prior to sale. At the time, the Australian standards governing revaluations of property, plant and equipment permitted capital adjustments for revaluation increments – usually to an asset revaluation reserve<sup>11</sup> – while revaluation decrements were recognized as expenses and included in the measurement of income.

<sup>9</sup> 'Point-of-sale' costs include brokerage commissions, levies by regulatory agencies, transfer taxes and duties. They exclude transport and other costs necessary to get the biological assets to a market.

<sup>10</sup> There are some differences between the two standards but these are not relevant to the analysis in the present study. These differences include a narrower scope of *IAS 41*, accounting for some biological assets under lease, inclusion of a rebuttable assumption in *IAS 41* in relation to the reliable measurement of the fair value of biological assets, and inclusion of specific requirements in *IAS 41* relating to government grants.

<sup>11</sup> An 'asset revaluation reserve' is a special purpose reserve established to record increases in the value of property, plant and equipment. The asset revaluation reserve is reported as part of equity in the balance sheet.

Compliance with the requirements of *IAS 41* regarding the use of fair value and recognition of unrealized gains or losses will produce marked changes to the ways in which reporting entities in the agricultural sectors of Europe, Africa and Asia measure biological assets and income. Historical cost is the most common measurement method for agricultural assets within the EU (Argilés and Slof 2001). Also, a persuasive case has been made that the requirements of *IAS 41* are not theoretically or practically compatible with the accounting models in Francophone countries (Elad 2004).

The changes to accounting practices that occurred in Australia with *AASB 1037* and that will occur with *IAS 41* have sparked considerable debate. There are two main issues of concern – the measurement of biological assets at fair value and the recognition of changes in fair value of biological assets (unrealized gains or losses) as part of income at each reporting date. Each is now discussed in turn.

#### *Determination of fair value*

Advocates of *fair value* argue that it is easy for financial report users to understand, particularly when there are active and liquid markets for the biological assets in question. Further, fair value is considered to be more relevant, and to more faithfully represent the reality of biological transformation. In contrast, opponents have focused on the practical difficulties with valuing biological assets for which there are no active and liquid markets. In these cases, ascertaining fair values may prove to be excessively costly, particularly in developing countries (Elad 2004). Also, the subjectivity in estimates of fair value reduces the reliability of reported information and provides scope for manipulation (Herbohn 2006). Additionally, there are practical difficulties in valuing biological assets separately from related assets such as the land on which they are located. For instance, a study of the application of *AASB 1037* by seven Australian companies in the wine-making industry by Booth and Walker (2003) was highly critical of AASB in respect to the practical difficulties associated with separating the value of vineyards from other parts of the business:

The application of *AASB 1037* provides little guidance to the commercial performance of winemakers. The valuation of grapevines essentially requires the valuation of a segment of a business (vineyards) from which is deducted the value of associated infrastructure ... this creates a reporting maze which is more likely to confuse than inform (Booth and Walker 2003, p. 52).

In summary, the general conclusion that critics have reached is that the approach of *IAS 41* is too academic and not focused on the practicalities of reporting on biological assets. This leads to the production of potentially misleading information. Also, little attention has been paid to the problems of accounting for biological assets at fair value in developing countries.

#### *Recognition of unrealized gains or losses from holding biological assets*

Possibly the most criticized requirement of *IAS 41*, and of *AASB 1037*, is the inclusion in income of the entity of any unrealized gains or losses arising from changes in the fair value of biological assets measured at reporting date. Proponents argue that inclusion of these gains and losses reflect the efforts of managements'

stewardship of the biological assets over the period, somewhat similar to the ‘percentage-of-completion’ revenue recognition method for long-term construction contracts (Elad 2004). However, critics maintain that there is too much uncertainty regarding the ultimate realization of the revenue. This is particularly the case for biological assets with long production cycles such as forests and grape vines used to produce fortified wines. The recognition of profits that are not realized for several years may also lead to unrealistic expectations of distributable profits amongst shareholders, in turn creating pressure for entities to declare and pay dividends for which no funds are available. Additionally, recognition of unrealized gains or losses increases the volatility of reported income. A review of four years of reporting on Australian agricultural assets by Herbohn (2006) found that the coefficient of variation<sup>12</sup> calculated for the gains or losses reported for biological assets was high (79.1%).

### Concerns for Holders of Timber Assets

The scope of *IAS 41* is broad, covering biological assets including forests, as well as livestock and horticultural assets. A similarly broad scope of *AASB 1037* led to concerns expressed by Australian reporting entities that the standard was more appropriate to biological assets with long production cycles such as forests rather than shorter-cycle assets such as wheat crops. On this basis, more support for the requirements of *IAS 41* and *AASB 1037* could be expected from holders of timber assets. To some extent this expectation was the case in Australia. Content analysis of submissions made on the draft of *AASB 1037*<sup>13</sup> indicated that in contrast with uniform opposition from holders of vineyards, crops and orchards, eight out of 10 submissions from forest holders signalled either qualified or total support for the standard (Herbohn 2006). The positive support was, however, concentrated amongst managers from public sector organizations with timber assets – that is, state and territory government departments. The managers’ only concern was the subjectivity of fair value estimates<sup>14</sup> in the absence of active markets for immature plantations. As one manager commented:

[I]n the absence of an active and liquid market from which to determine a market value for a plantation, entities are more or less able to choose whatever valuation method they consider appropriate. Thus the proposed standard’s failure to adequately address the issue of valuation will result in a variety of valuation

<sup>12</sup> In this context, the coefficient of variation is calculated as the standard deviation of gains or losses divided by mean gains or losses for the four-year period investigated (Levine *et al.* 2002).

<sup>13</sup> The draft of *AASB 1037* took the form of Exposure Draft No. 83 ‘Self-generating and Regenerating Assets’. The exposure draft was open for public comment and the submissions were made available to the general public.

<sup>14</sup> *AASB 1037* required biological assets (referred to as self-generating and regenerating assets) to be valued at net market value. This was defined as the amount that could be expected from the disposal of the biological asset in the ordinary course of business. There is little practical difference between net market value and fair value as required by *IAS 41*. Thus, the term fair value is used throughout this paper to minimise confusion in terminology.

methods continuing to be used to value forestry assets' (Australian Accounting Research Foundation 1997, p. 96).

The remaining two negative submissions on the draft of *AASB 1037* were from public companies – North Forest Products Ltd and Amcor Ltd. Not surprisingly, both companies were concerned with the difficulty of measurement of biological assets at fair value and the recognition of unrealized gains or losses. The following extract from the submission of North Forest Products illustrates their position:

... suggesting that all movements in valuation are booked to the profit and loss. This would be unacceptable for a number of reasons, but predominantly due to the volatility arising from subjective economic assumptions [exchange rates, discount rates and future sales prices]. Profit or loss booked to profit and loss is unrealized. This implies that dividends available for distribution may be paid well in advance of any cash flows obtainable from the harvest of the forest (Australian Accounting Research Foundation, 1997, p. 65).

In summary, the initial reactions to *AASB 1037* of Australian reporting entities with material holdings of timber assets, particularly government departments, suggest that the requirements of *IAS 41* are less controversial than for other biological assets. The issues raised by managers from public companies centred on the inclusion of unrealized gains or losses in income, while the availability of measurement choices concerned managers of public sector organizations.

### **SOME IMPACTS OF COMPLIANCE WITH *AASB 1037***

*Further insights into the potential impacts of IAS 41* may be obtained by examining the financial statements of entities reporting on their timber assets in accordance with *AASB 1037* 'Self-generating and Regenerating Assets' over the four-year period since introduction. The purpose of the review is to identify the effects of compliance, with a focus on the two main areas of criticisms with *IAS 41* and *AASB 1037*:

- The income statement effect of including unrealized gains or losses from changes in the fair value of forest assets and the fair value of agricultural produce harvested less point-of-sale costs.
- The valuation methods applied to timber assets, and any associated disclosures.

### **Selecting the Reporting Entities**

A sample was taken from the population of listed public companies and state and territory government agencies and departments that had material holdings of timber assets. Each of the six state and two territory governments in Australia has a department with responsibility for managing the natural resources of that state or territory. In most cases these natural resources comprise timber plantations and native forests managed for commercial timber production. Three government departments were not included in the review.



The sample selection criterion imposed was that annual reports for these public and private sector reporting entities must be available, for the period 30 June 2000 until 30 June 2004, from their web site, Aspect Huntley DatAnalysis, the Australian Stock Exchange, Connect 4 or IRESS. Three government departments were not included in the sample. Biological assets were not reported in the financial statements of one state department and one territory department, while the financial records of another territory department had been destroyed by fire. A final sample of eight public companies and five state and territory government departments was included in the analysis.

The starting point of the time period was selected because this was the initial operative date for *AASB 1037*. Although this date was subsequently extended to reporting periods ending on or after 30 June 2001, there was the possibility that companies may have elected early compliance with the requirements of the standard.

### **Income Statement Effects of Compliance with AASB 1037**

Details of the total impact of *AASB 1037* on profit or loss for companies that have material holdings of timber assets are provided in Table 1. The total gain or loss for timber assets included in income in accordance with *AASB 1037* is expressed as a percentage of the net profits reported in that year. This variable is calculated in the year of compliance with *AASB 1037* and for each of the three years subsequent to compliance. The total gain is equal to the change in fair value of timber assets measured at balance date plus the fair value of agricultural produce extracted.

From Panel A of Table 1, the mean timber asset gain reported by public companies accounted for 14.9% of reported net profit in the year of compliance, 24.5% in the year after compliance, 40.5% two years after compliance, and 27.5% three years after compliance. In contrast, the median proportion of net profit represented by the timber asset gain in each year is 8.5%, 11.3%, 20.0% and 15.0% respectively. The differences between the two measures of central tendency are due to large gains on timber reported by outlier companies. For example, Auspine Ltd reported a gain on timber of A\$18.48 M and a net profit of A\$22.54 M in the year after compliance, and a gain on timber of A\$19.03 M and net profit of A\$13.12 M two years after compliance. Also, two years after compliance Willmott Forests Ltd reported a timber gain of A\$0.960 M and a net profit A\$0.981 M, while Forest Enterprise Australia reported a gain of A\$0.356 M in the context of a net profit of A\$0.361 M three years after compliance.

The income statement impacts reported in Table 1 have been greater on average for state and territory government departments, than for public companies. The mean timber asset gain is larger for the departments than public companies in all years of compliance with *AASB 1037* except for the last year, while the median is greater in all years. For example, the median timber gains reported by departments was equal to 58.0% of net profit in the year of compliance (8.5% for companies), 79.9% one year after compliance (11.3% for companies), 44.5% two years after compliance (20.0% for companies) and 24.3% three years after compliance (15.0% for companies).

**Table 1.** Income statement effects of compliance with *AASB 1037* for Australian reporting entities with material holdings of timber assets, 2000-04

| <b>Panel A:</b> Income statement impact for four years since compliance with <i>AASB 1037</i>        |  |   |
|--|--|---|
| Time period  | Gain or loss from timber assets included in income for the year expressed as a percentage of net profit <sup>1</sup> |   |
|  | Public companies<br>(n = 8)  | State and territory govt.<br>depts. (n = 5) |
| Year of compliance   |  |   |
| Mean   | 14.9%  | 43.7%                                       |
| Median   | 8.5%   | 58.0%                                       |
| One year after compliance  |  |   |
| Mean   | 24.5%  | 75.5%                                       |
| Median   | 11.3%  | 79.9%                                       |
| Two years after compliance   |  |   |
| Mean   | 40.5%  | 54.5%                                       |
| Median   | 20.0%  | 44.5%                                       |
| Three years after compliance   |  |   |
| Mean   | 27.5%  | 22.1%                                       |
| Median   | 15.0%  | 24.3%                                       |
| <b>Panel B:</b> Coefficient of variation for four years since first compliance with <i>AASB 1037</i> |  |   |
| Coefficient of variation   | Public companies<br>(n = 8)  | State and territory govt.<br>depts (n = 5)  |
|  | 91.4%  | 103.1%                                      |

<sup>1</sup> Change in fair value of timber asset measured at balance date plus the fair value of agricultural produce extracted.

In summary, it seems that accounting for timber assets in accordance with *AASB 1037*, on average, has had considerable impact on the reported net profit of listed companies and an even greater impact on the operating result of state and territory government departments in the three years since compliance. This result persists after outliers are taken into account by focusing on median gains.

Panel B of Table 1 reports a coefficient of variation for companies and government departments. This statistic provides an insight into the volatility of the timber gain or loss reported by each company and government department over the four-year window since initial compliance with *AASB 1037*. The coefficient was 91.4% for public companies, and 103.1% for government departments. Prima facie, this provides evidence to support arguments made by reporting entities that there is increased variability of reported profits due to compliance with *AASB 1037*. This volatility is greater for government departments than for public companies in the period considered, a result which must be treated with some caution, however, because of the small sample size.

### Measurement of Timber Assets at Fair Value

The most recent financial statement for each company and department in the sample was reviewed to identify how timber assets were measured and the extent of associated disclosures. Of particular interest are the disclosures made if the fair values of timber assets are based on amounts other than market prices observed in active and liquid markets. The disclosures include the method of determining the market values, any important assumptions in determining the net market values, and whether the net market values have been determined in accordance with a directors' valuation, or an independent valuation with the name of the valuer provided if this is the case. Unlike *IAS 41*, *AASB 1037* also 'encouraged' entities to report information on the sensitivities of the carrying amounts of timber assets to changes in the underlying assumptions (para. 7.1.4). The results are reported in Table 2.

**Table 2.** Methods used to measure the fair value of timber assets in accordance with *AASB 1037* by Australian reporting entities with material holdings of timber assets, 2000-04

| Sector         | Net market value | Net market value based on amounts other than market prices observed in active and liquid markets |                                   |                 |             |
|----------------|------------------|--|-----------------------------------|-----------------|-------------|
|                |                  | Net present value  | Net realisable value <sup>1</sup> | Insurance value | Unspecified |
| Private sector | 1                | 5  | ---                               | 1               | 1           |
| Public sector  | ---              | 3  | 2                                 | ---             | ---         |
| Total          | 1                | 8  | 2                                 | 1               | 1           |

<sup>1</sup> Net realisable valued is based upon standing volumes and current prices less the direct cost of disposing of the timber. Estimates of the standing volume of timber are made using growth simulation models.

Only one company valued timber assets at fair value observed in active and liquid markets. PaperlinX Ltd valued standing timber at current market values and made the following disclosures in its 2001 Financial Report.

*Note 1(17) Standing Timber*

'.. whereby standing timber is valued at net market value ...'

*Note 14 Standing Timber*

*At Valuation*

'Standing timber greater than 10 years of age is valued at the market price of estimated recoverable wood volume net of harvesting and delivery costs.'

Twelve of the 13 reporting entities valued timber assets at fair value based on amounts other than market prices observed in active and liquid markets. Three measurement methods were used. First, eight out of 13 companies used a discounted cash flow methodology, all reporting a directors' valuation of net present value. Second, two government departments estimated fair value using the net realizable value of timber assets, based upon standing volumes and current prices less the direct cost of disposing of the timber. Estimates of the standing volume of timber were made using growth simulation models, with growth estimates periodically

adjusted for differences with observed growth rates. For example, the following explanation was provided in the 2004 Financial Report of the government department Forestry South Australia:

*Note 2.4 Forestry Accounting*

The volume of growing timber is estimated using a model that simulates forest growth ... The model uses sample inventory data as the base line from which to start growth simulations. Inventory data are continuously being collected from sample inventory plots with the complete forest estate being covered in about five yearly intervals.

The third measurement method was to use the insured value of timber assets. This approach has been used by the company Great Southern Plantations since 2001.

Although one company reported that timber assets were valued at fair value, there was no disclosure of the method used to determine fair value. For example, it was noted in the 2002 Financial Report of Yates Ltd that 'where there exists an active and liquid market for certain self-generating and regenerating assets, they are measured at net market value at each reporting date' (note 1(r), p. 18). In note 13 (p. 26) 'Self-generating and Regenerating Assets', plantation timber valued at A\$612,000 was disclosed at fair value with only the explanation that 'net market value has been determined on the basis of Directors' valuation'.

There was inconsistency in the disclosure of major assumptions necessary to determine fair values. Most entities tended toward brief, uninformative disclosures. There were, however, three companies – Auspine Ltd, Willmott Forests Ltd and Timbercorp Ltd – and two government departments – Queensland Department of Primary Industries and Forestry Tasmania – that made genuine attempts to disclose information relevant to the determination of fair value of timber assets. The information provided included discount rates and detailed information on productive lives of timber assets, their location and their size.

Of the sample of 13 reporting entities, only two companies and one government department provided the recommended information on the sensitivities of the 'carrying amounts' of timber assets to changes in underlying assumptions. Willmott Forests, Timbercorp and Queensland Department of Primary Industries disclosed the impact of varying discount rates, future costs and market prices on the reported fair values of their holdings of standing timber.

## **IMPLICATIONS OF IAS 41 FOR EU REPORTING ENTITIES**

Key areas of concern that have been raised with *IAS 41* relate to the measurement of biological assets at fair value and the inclusion of unrealized gains or losses from measuring these assets at fair value in income. The similarities between the requirements of *IAS 41* and the Australian standard *AASB 1037* allow Australian experiences to be used to assess the significance of potential issues with *IAS 41*. To this end, this paper reports the results of a review of the financial statements of a sample of Australian companies and government departments that reported timber assets in compliance with the requirements of *AASB 1037*.

Due to the developing nature of the plantation estate in Australia (see Herbohn and Harrison 2004) there is not likely to be an active and liquid market for timber assets. Thus, it is not surprising that the review revealed variability in the measures of fair value that included net present values, insured amounts of the timber assets, and net realizable values. It appears that directors' valuations are used – that is, internal valuations without input from external, independent valuers. In addition, the disclosure of assumptions made when determining net market values has been cursory in most cases.

These results bear out concerns that the determination of fair value for timber assets is likely to be subjective – in the sense of being an 'in-house valuation' rather than a fair value from a market transaction between two or more independent parties – which creates the potential for manipulation. This is particularly so since the supporting disclosures of important assumptions by more than half of the Australian sample are not particularly informative. Also, the variety of choices available to reporting entities in estimating fair value results in a diversity of methods between entities. The irony is that international harmonization of accounting standards may, in the case of *IAS 41*, actually decrease comparability between reporting entities because of the judgments necessary to estimate fair values of timber assets in the absence of active and liquid markets. The Australian experiences also clearly highlight that some sophistication of internal management information systems is necessary, for example, in developing and applying plantation growth models to estimate the standing volume of timber for input into an estimate of net realizable value. As pointed out by Elad (2004), this has the potential to cause implementation bottlenecks in developing countries.

Recognition of gains from timber assets resulting from changes in fair value and harvest of agricultural produce has a major impact on the income statements of companies and government departments. Over the four-year period since first compliance with *AASB 1037*, the median timber gain expressed as a percentage of reported profits for companies ranged from 8.5% in the year of compliance to 15% three years after compliance. In some years, individual companies reported annual timber gains that were larger than the reported net profit for the period. The impact has been greater for government departments. The median timber gain expressed as a percentage of net profit ranged from 44.5% to 79.9% in individual years.

An interesting area to investigate further is the economic consequences of including unrealized gains as part of income. Of particular interest would be whether the inflation of income with unrealized gains creates unrealistic expectations regarding the payment of dividends by companies. A further question is whether this accounting practice has assisted managers from government departments in meeting performance targets set by funding bodies.

There has also been increased volatility introduced into net profit by the timber gains recognized in accordance with *AASB 1037* over the four-year window investigated. The coefficient of variation for the timber gains over the four years was particularly high for public companies and for government departments. This result bears out concerns raised by constituents about *AASB 1037* when it was in draft form (Herbohn and Herbohn 1999, Herbohn, 2006). The fair values of the biological assets tend to be volatile because they can be affected by volatility in world commodity prices, changes in government policy, and natural events such as rain, hail, drought, flooding, wildfire, and pests and diseases. It follows that unrealized

gains or losses from changes in fair value of biological assets at each reporting date are also volatile.

The wisdom of using a reporting method which introduces increased volatility in measures of income has been criticized because it is likely to mislead report users. An alternate view is that including unrealized timber gains or losses in reported profits provides more timely information to users of financial reports. The communication of changes in fair values of timber assets each reporting period provides users with information that is relevant to assess performance of their investment and the efforts of management over the period. Further, it can be argued that the volatility that is introduced into income merely reflects the inherent risk of an investment in the agricultural sector.

## CONCLUDING COMMENTS

Accounting for biological assets and in particular forest assets presents many difficulties. In fact, the standard *IAS 41* has attracted some scathing criticisms: 'Overall, the IASC's project on agriculture appears to have portrayed a dubious triumph of theory of pragmatism' (Elad, 2004, p. 638).

International Accounting Standard *41* is without a doubt an ambitious and far-reaching standard. Its scope is broad, with applicability to many types of biological assets utilised by a wide range of industries. Further, it seeks to introduce major changes to existing agricultural reporting practices. Australia has in effect been a test case for *IAS 41* and has experience of four years of reporting under this regime. It is clear that there is high subjectivity in the measurement of fair value, substantial unrealized gains are included in annual net profit, and there is increased volatility in income due to these gains. However, an important question that has been buried in the debate on *IAS 41* is whether this reporting regime in fact *reflects* the nature of investment in the agricultural sector and, in the context of this paper, of timber assets. Additionally, while measurement at fair value and the recognition of changes in fair value as gains or losses represents a change to existing agricultural accounting practice, it is consistent with the general direction of International Financial Reporting Standards. As noted by Whittington (2005, p. 146), 'changes in fair values are becoming increasingly a feature of IFRS and financial reporting practice generally'.

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